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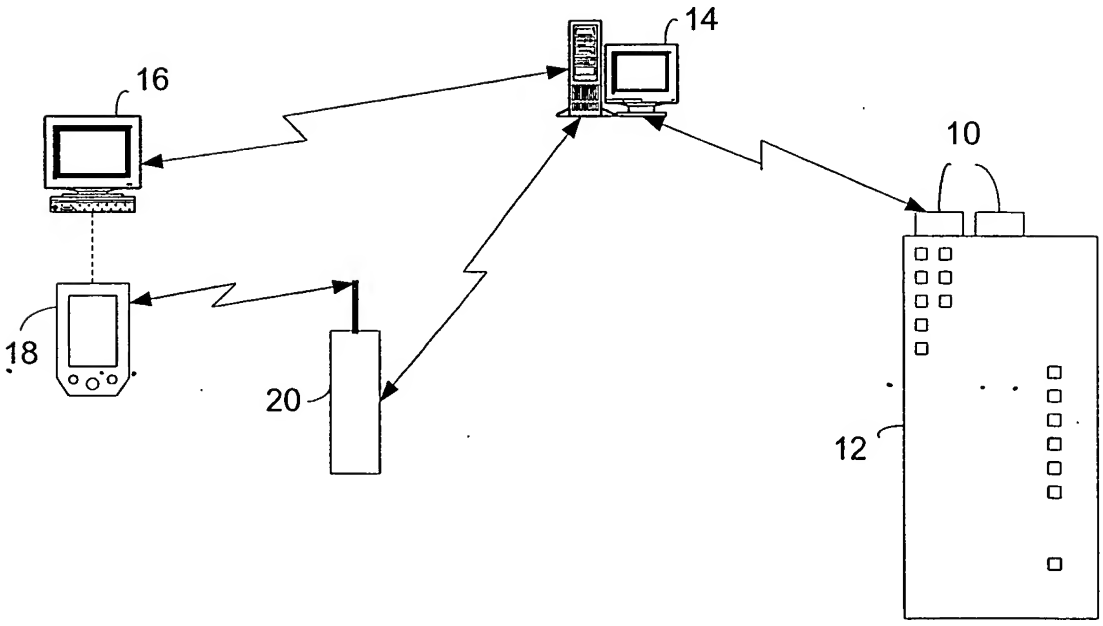

FIG. 1

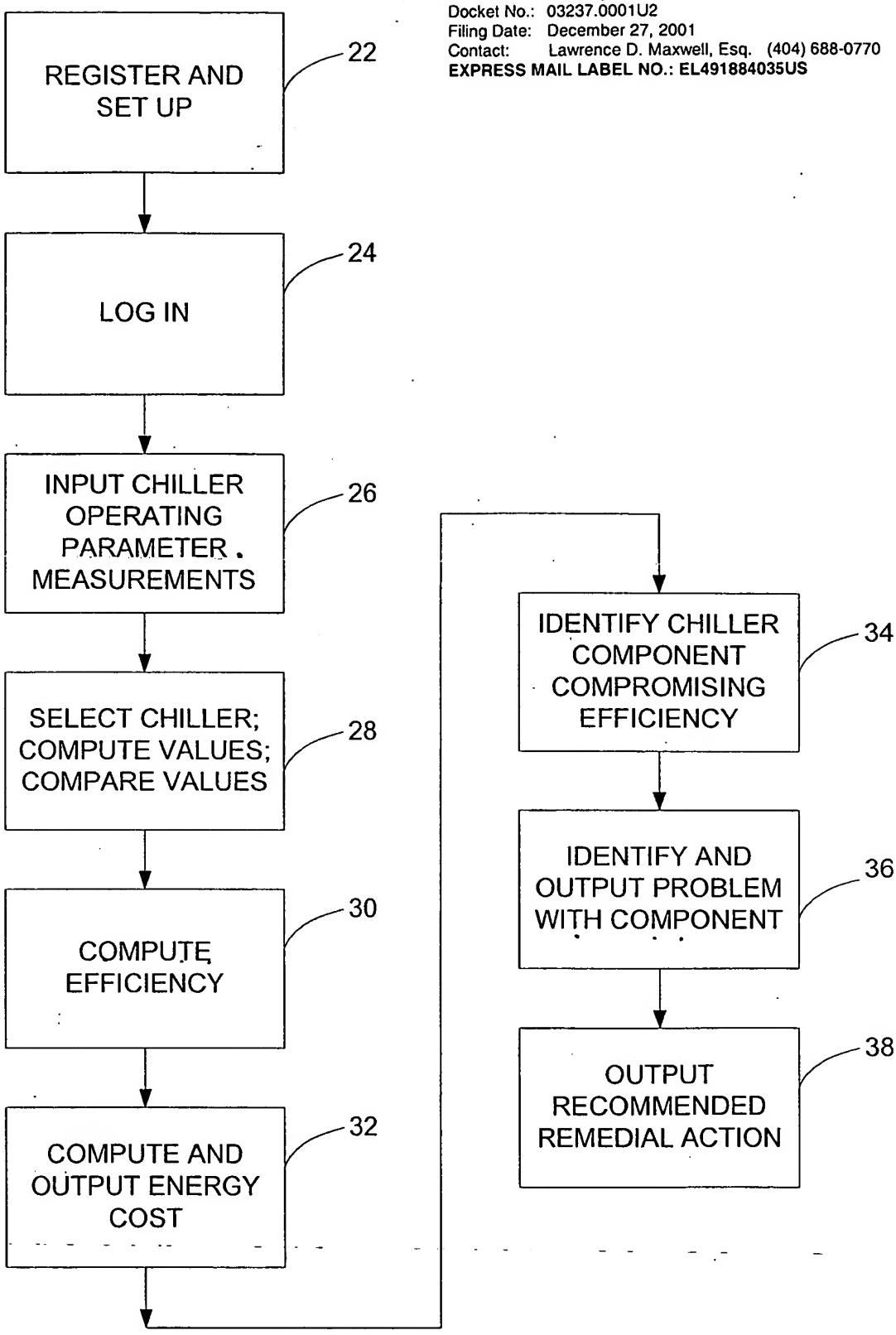

FIG. 2

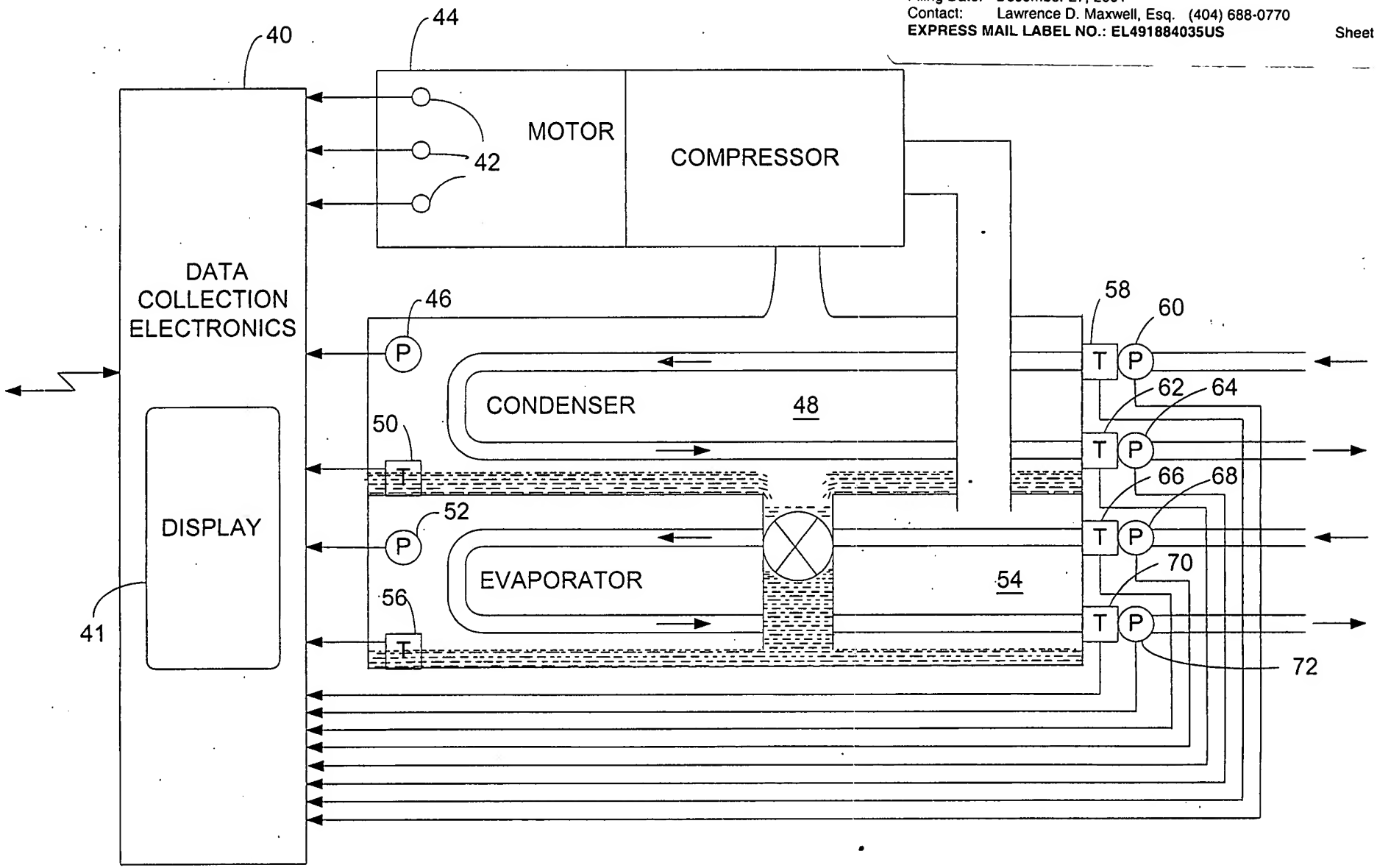
40
44
MOTOR
COMPRESSOR
42
DATA COLLECTION ELECTRONICS
46
58
60
CONDENSER
48
62
64
50
DISPLAY
52
66
68
EVAPORATOR
54
70
56
41
72

FIG. 3

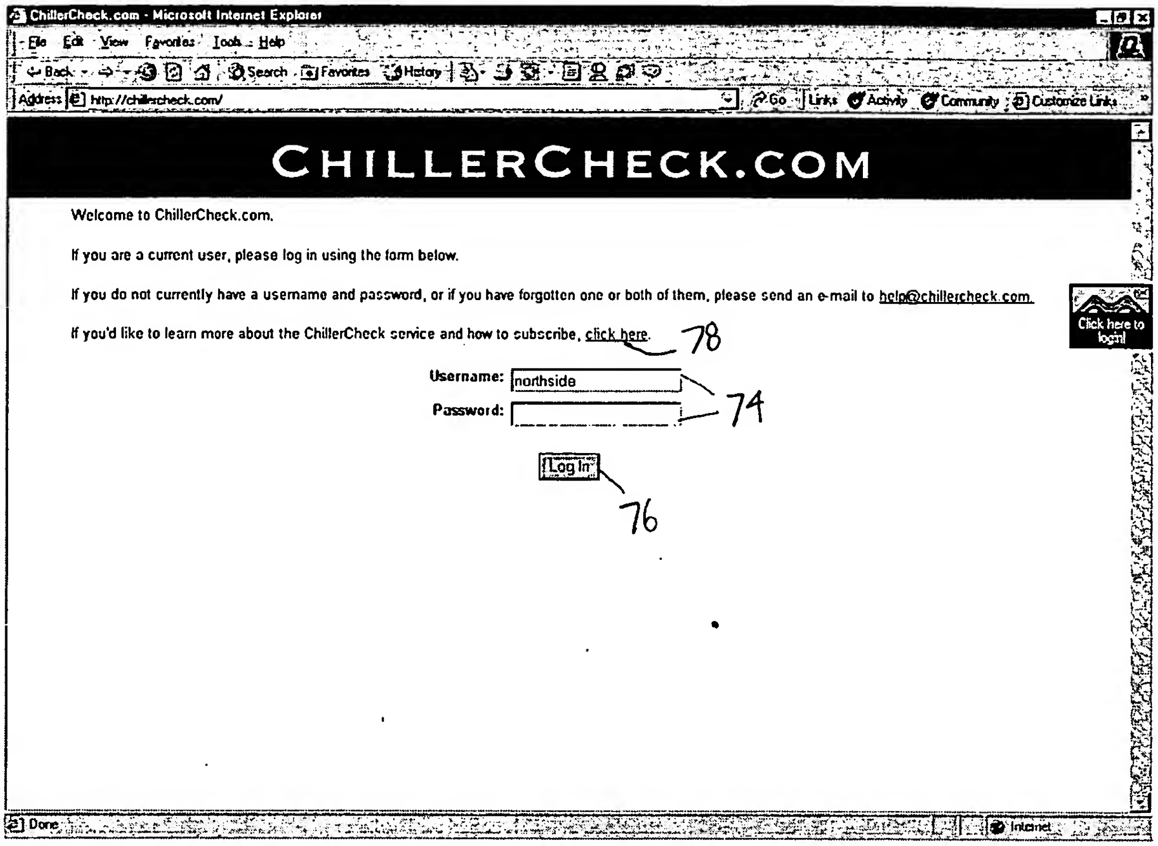

FIG. 4

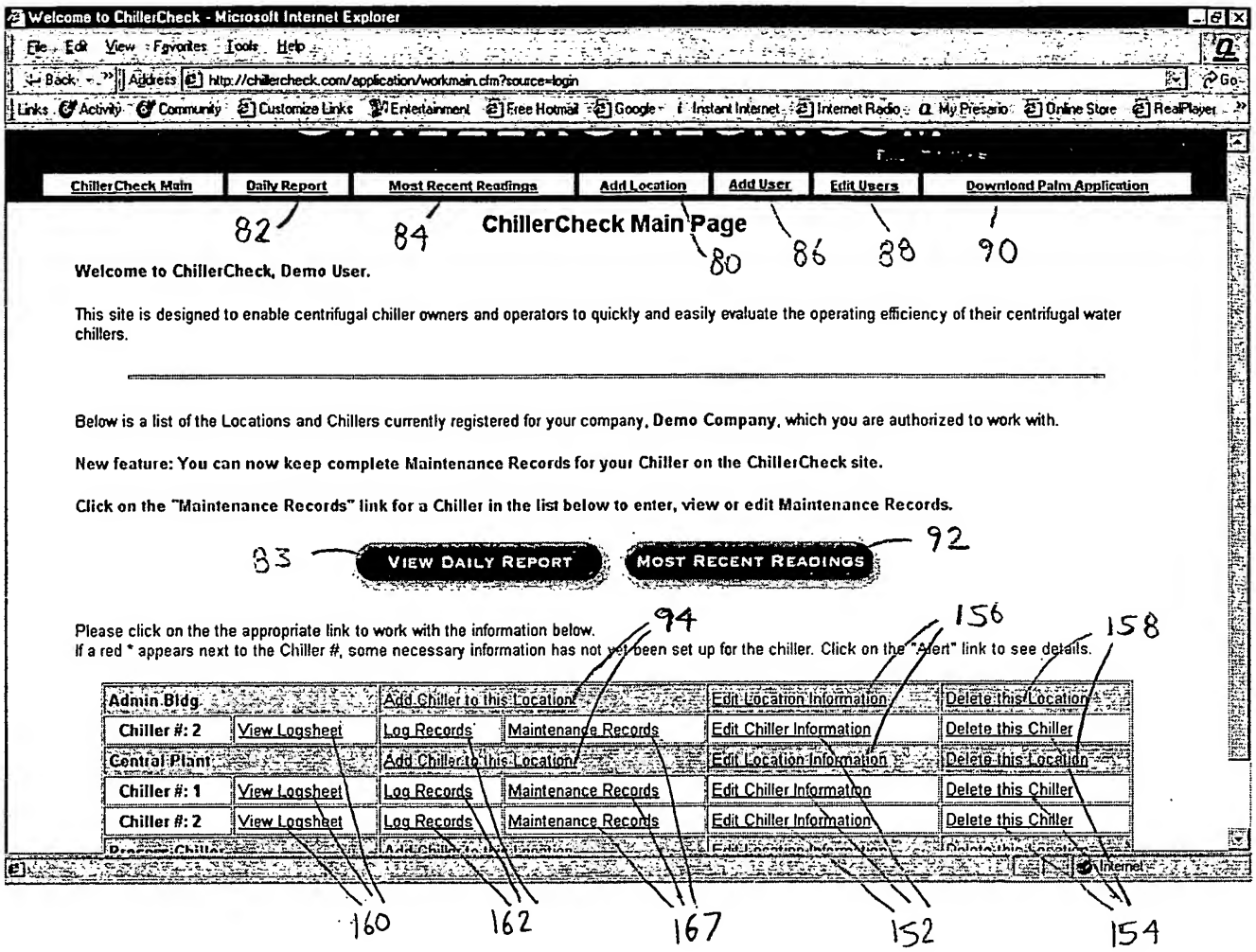

FIG. 5

Inventor: Lawrence J. Seigel
Title: "METHOD AND SYSTEM FOR EVALUATING THE EFFICIENCY OF AN AIR CONDITIONING APPARATUS"
Serial No.: Unassigned
Docket No.: 03237.0001U2
Filing Date: December 27, 2001
Contact: Lawrence D. Maxwell, Esq. (404) 688-0770
EXPRESS MAIL LABEL NO.: EL491884035US

CHILLERCHECK.COM

ChillerCheck Main	Daily Report	Most Recent Readings	Add Location	Add User	Edit Users	Download Palm Application

82 84 80 86 88 90

Add a Chiller at Atlanta Office Bldg.

Please fill in all information in the form below, then click the "Add Chiller" button.

You will then be taken back to the ChillerCheck Main page, where you can work with any of your Location, Chiller or Chiller Log records.

Note: If you do not have all the information below available at this time, you can still add the Chiller by filling out only the required information (marked with a * below) now. You can come back later and add the rest of the information. However, you will not be able to make efficiency calculations or graph trends until all Chiller information has been recorded.

Chiller Information

Help! * Chiller #:	96
* Make:	Choose a Make 98
Help! * Model:	100
Help! Serial #:	102
Help! * Refrigerant Type:	Choose a refrigerant 104
Help! Year Chiller Was Manufactured:	Choose a year of manufacture 106
Help! * Efficiency Rating (kw/ton):	108
Help! * Energy Cost ($/kw hour):	110

FIG. 6A

Help! * Weekly Hrs. of Operation:	[ ] 112
Help! * Weeks Per Year of Operation:	[ ] 114
Help! * Average Load Profile:	[ ] % 116
Help! * Tons:	[ ] 118
Help! * Design Voltage:	[ ] 120
Help! * Full-Load Amperage:	[ ] 122
Now we need some information about the Condenser.	
Help! Design Condenser Water Pressure Drop: (This value may be omitted if necessary, but your calculations will be more accurate if you have it. If you enter a value, you must choose a unit of measure.)	[ ] 124 Choose a pressure unit 126
Help! Please choose a unit of measurement for the Actual Condenser Water Pressure Drop:	Choose a pressure unit 128
Help! Please choose a unit of measurement for Condenser Pressure:	Choose a pressure unit 130
Design Condenser Approach Temp: (This value may be omitted if you do not have it.)	[ ] 132

FIG. 6B

Now we need some information about the Evaporator.	
Help! **Design Chill Water Pressure Drop:** (This value may be omitted if necessary, but your calculations will be more accurate if you have it. If you enter a value, you must choose a unit of measure.)	[ ] Choose a pressure unit 134 136
Help! **Please choose a unit of measurement for the Actual Chill Water Pressure Drop:**	Choose a pressure unit 138
Help! **Please choose a unit of measurement for Evaporator Pressure:**	Choose a pressure unit 140
Help! **Design Evaporator Approach Temp:** (This value may be omitted if you do not have it.)	[ ] 142
Help! **Evaporator Design Outlet Water Temp:**	[ ] 144
Please choose a method of calculating Oil Pressure Differential for the Compressor.	
Help! **Calculate Differential by:**	Choose a method 146

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EXPRESS MAIL LABEL NO.: EL491884035US

FIG. 6C

Th re are just a f w more things we need to know about this chiller.	
D es th chiller have a read ut for Purge Run Time?	○ Yes ○ No 143
If so, is the Purge Run Time measured only in minutes, or in both hours and minutes?	○ Minutes Only ○ Hours and Minutes 145
Please set a maximum amount of Purge Run Time per day you wish to allow before you are sent an alert.	Minutes 147
Does this chiller have a readout for Bearing Temperature?	○ Yes ○ No 149
Operator Notes: (Enter any notes you might want to record about this chiller.)	150
Add Chiller Info	

148

FIG. 6D

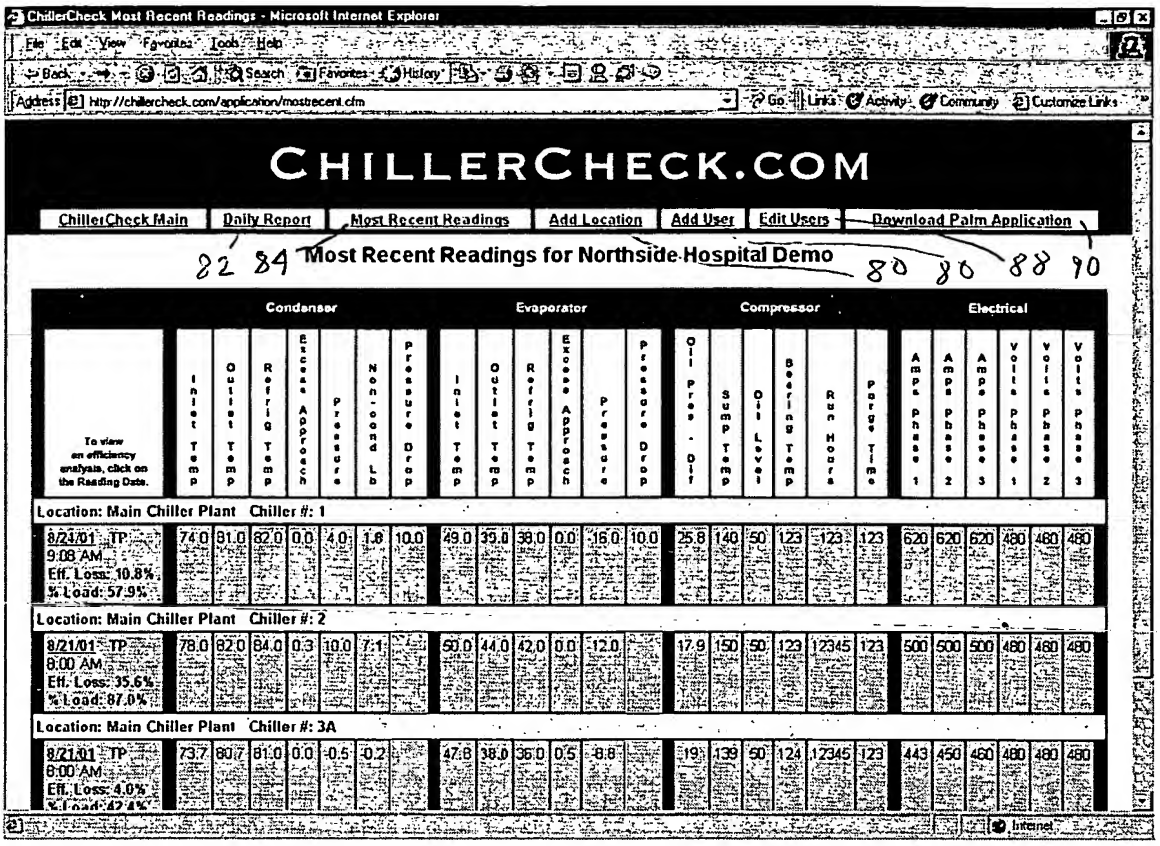


FIG. 7

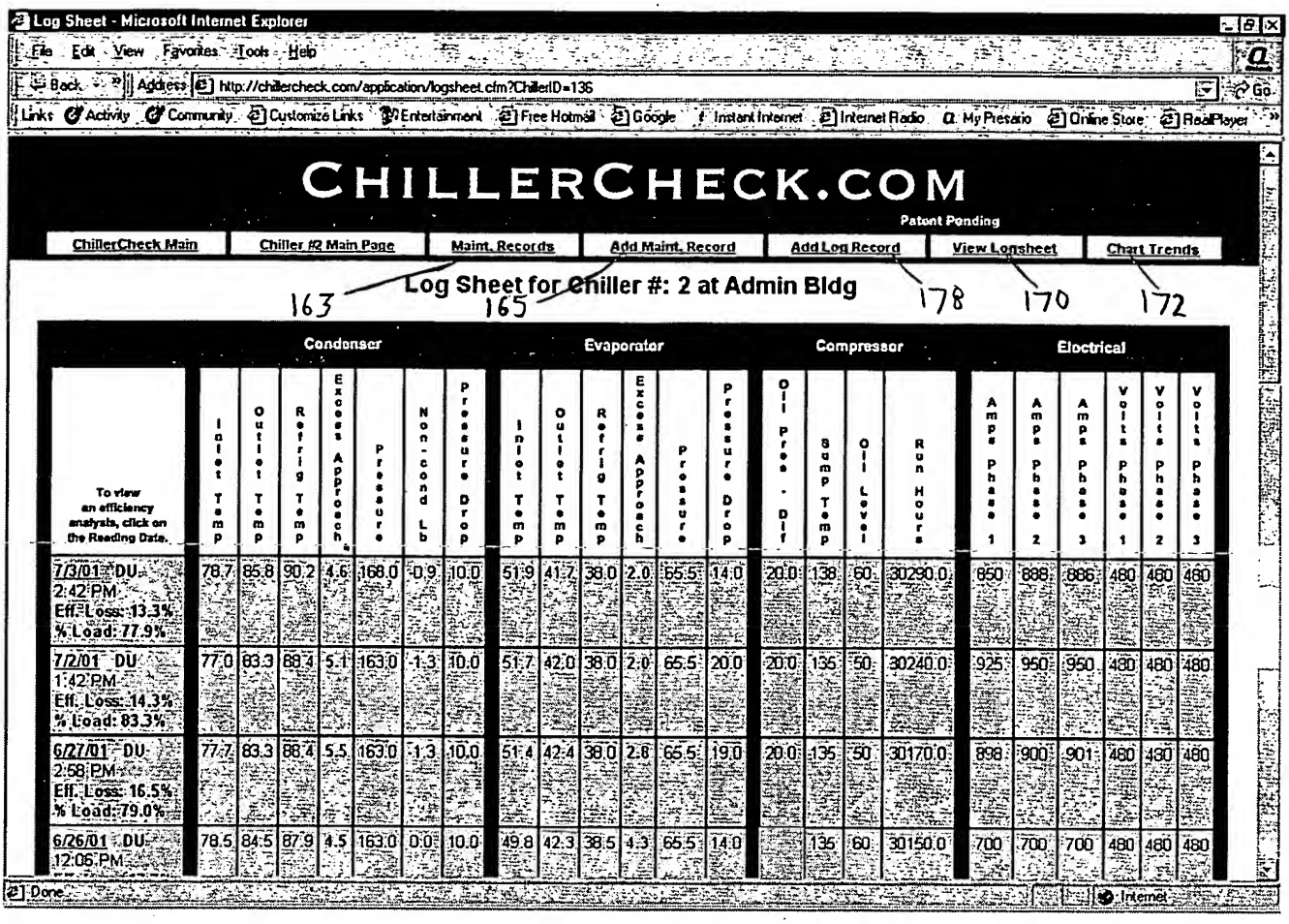


FIG. 8

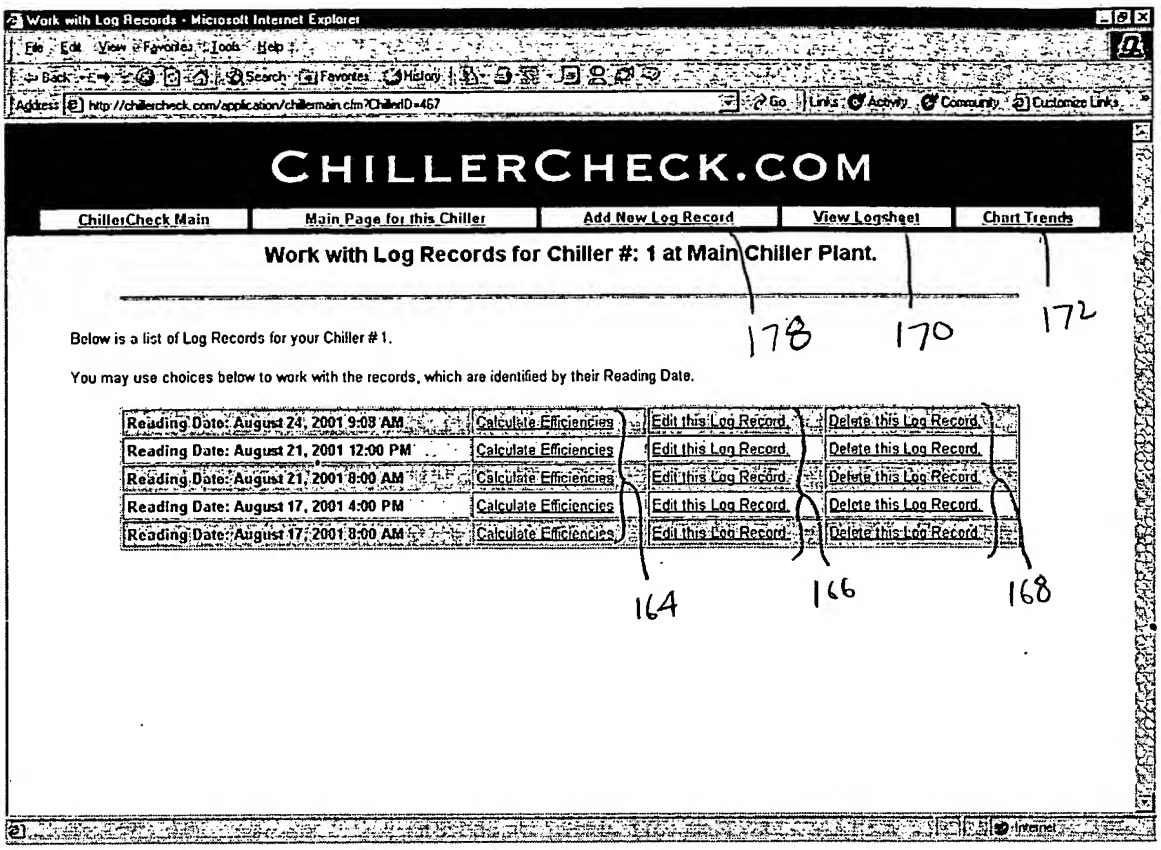
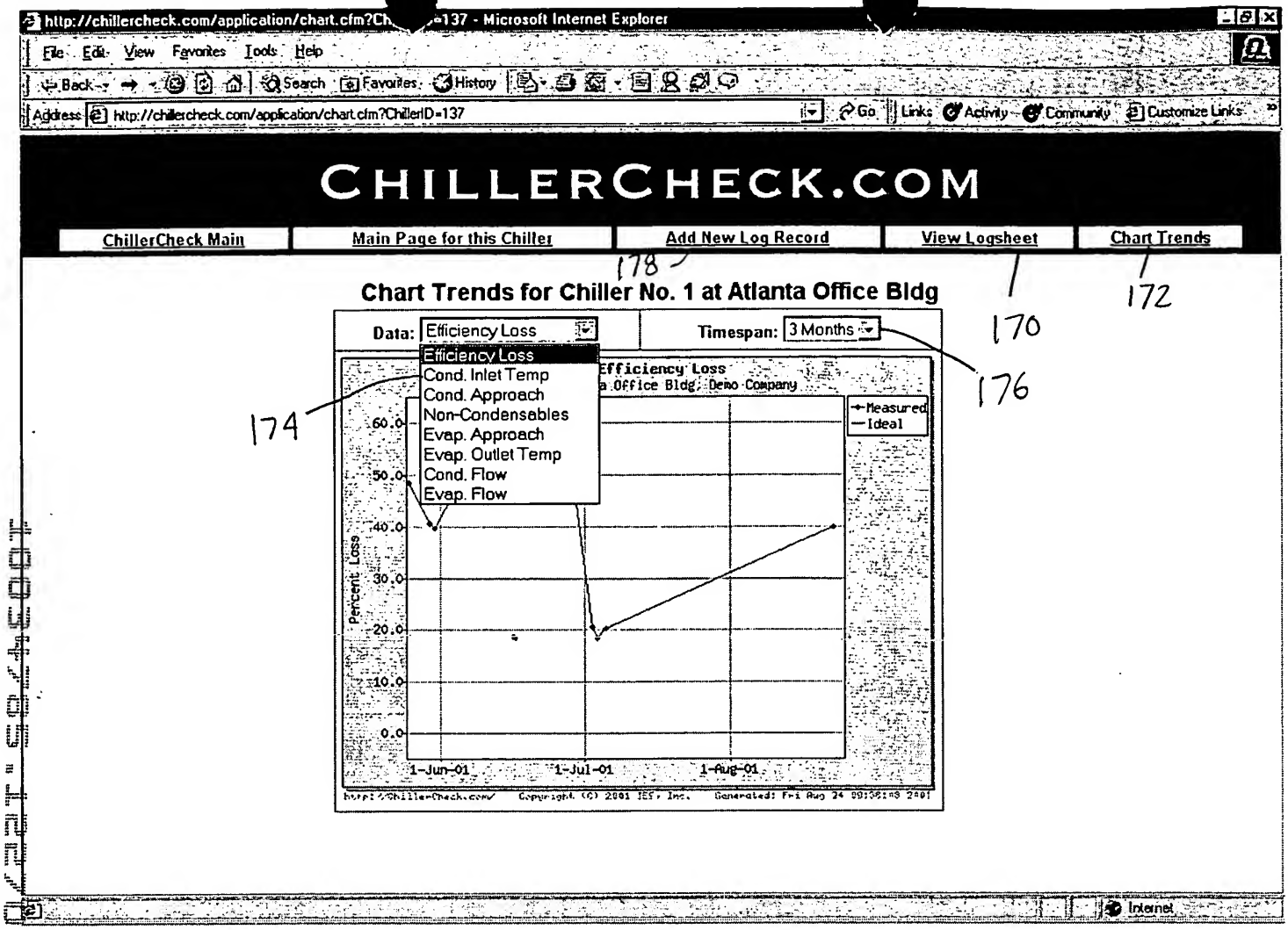


FIG. 9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File Edit View Favorites Tools Help
Back Search Favorites History
Address http://chillercheck.com/application/chart.cfm?ChillerID=137
Go Links Activity Community Customize Links
CHILLERCHECK.COM
ChillerCheck Main
Main Page for this Chiller
Add New Log Record
View Logsheet
Chart Trends
178
170
172
Chart Trends for Chiller No. 1 at Atlanta Office Bldg
Data: Efficiency Loss
Timespan: 3 Months
174
176
Efficiency Loss
Cond. Inlet Temp
Cond. Approach
Non-Condensables
Evap. Approach
Evap. Outlet Temp
Cond. Flow
Evap. Flow
Efficiency Loss
a Office Bldg, Demo Company
Measured
Ideal
Percent Loss
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1-Jun-01
1-Jul-01
1-Aug-01
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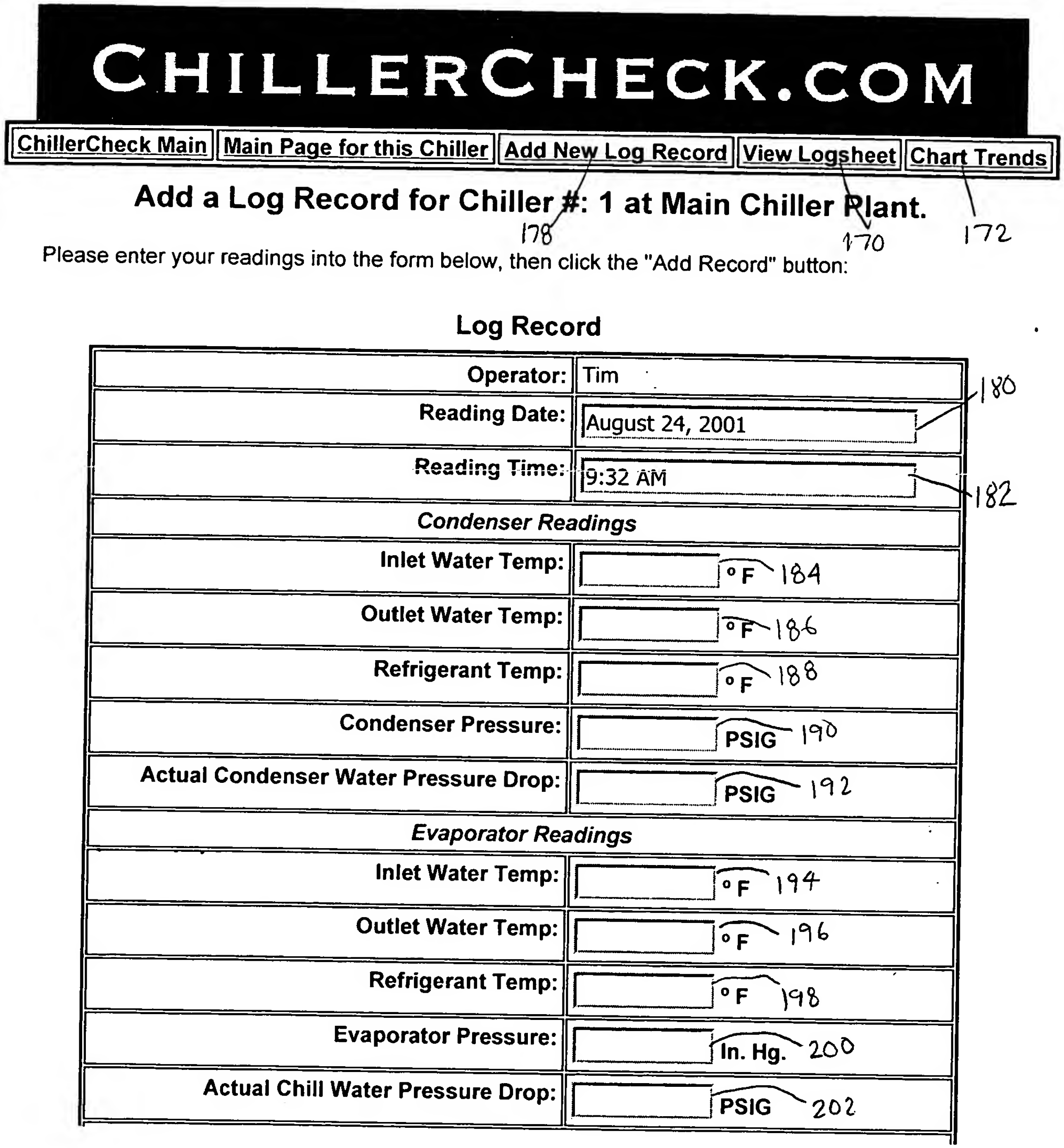
FIG. 10



CHILLERCHECK.COM

ChillerCheck Main	Main Page for this Chiller	Add New Log Record	View Logsheet	Chart Trends

Add a Log Record for Chiller #: 1 at Main Chiller Plant.

Please enter your readings into the form below, then click the "Add Record" button:

Log Record

Operator:	Tim
Reading Date:	August 24, 2001
Reading Time:	9:32 AM
Condenser Readings	
Inlet Water Temp:	°F
Outlet Water Temp:	°F
Refrigerant Temp:	°F
Condenser Pressure:	PSIG
Actual Condenser Water Pressure Drop:	PSIG
Evaporator Readings	
Inlet Water Temp:	°F
Outlet Water Temp:	°F
Refrigerant Temp:	°F
Evaporator Pressure:	In. Hg.
Actual Chill Water Pressure Drop:	PSIG

FIG. 11A

Inventor: Lawrence J. Seigel
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Docket No.: 03237.0001U2
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Contact: Lawrence D. Maxwell, Esq. (404) 688-0770
EXPRESS MAIL LABEL NO.: EL491884035US

Compressor Readings		
Oil Pressure (High):		lb. 204
Oil Sump Temp:		°F 206
Oil Level:		% 208
Bearing Temp:		°F 210
Run Hours:		212
Purge Pumpout Time:		214
Electrical Readings		
Amps Phase 1:		216
Amps Phase 2:		218
Amps Phase 3:		220
Volts Phase 1:		222
Volts Phase 2:		224
Volts Phase 3:		226
Operator Notes		
	228	
Add Log Record		230

FIG. 11B

Inventor: Lawrence J. Seigel
Title: "METHOD AND SYSTEM FOR EVALUATING THE EFFICIENCY OF AN AIR CONDITIONING APPARATUS"
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Contact: Lawrence D. Maxwell, Esq. (404) 688-0770
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CHILLERCHECK.COM

Patent Pending

ChillerCheck Main | Chiller #1 Main Page | Maint. Records | Add Maint. Record | Add Log Record | View Logsheet | Chart Trends

Efficiency Calculation for Chiller #1 at Admin Bldg.
Reading taken on October 10, 2001 at 1:50 PM

Results

Target Cost to Run for Year	$ 54,583
Actual Cost to Run for Year	$ 65,993
Cost of Efficiency Loss	$ 11,410
Efficiency Loss	20.9%

Detailed Cost of Efficiency Loss

Problem	Efficiency Loss	$ Cost	Solution
Fouled Tubes - Condenser	9.5%	$ 5,187	Fix It.
Non-condensables - Condenser	11.4%	$ 6,222	Fix It.

Your Condenser Water Flow is 3.6% below design.

Your Evaporator Water Flow is 21.9% below design.

There is an electrical imbalance that may be decreasing the performance of your Chiller.
The voltage imbalance is 3.62%.

The % load at this reading time was 88.9%.

Back to the main page for this Chiller.

163 165 178 170 172 232

FIG. 12

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Filing Date: December 27, 2001
Contact: Lawrence D. Maxwell, Esq. (404) 688-0770
EXPRESS MAIL LABEL NO.: EL491884035US
Sheet 16 of 22

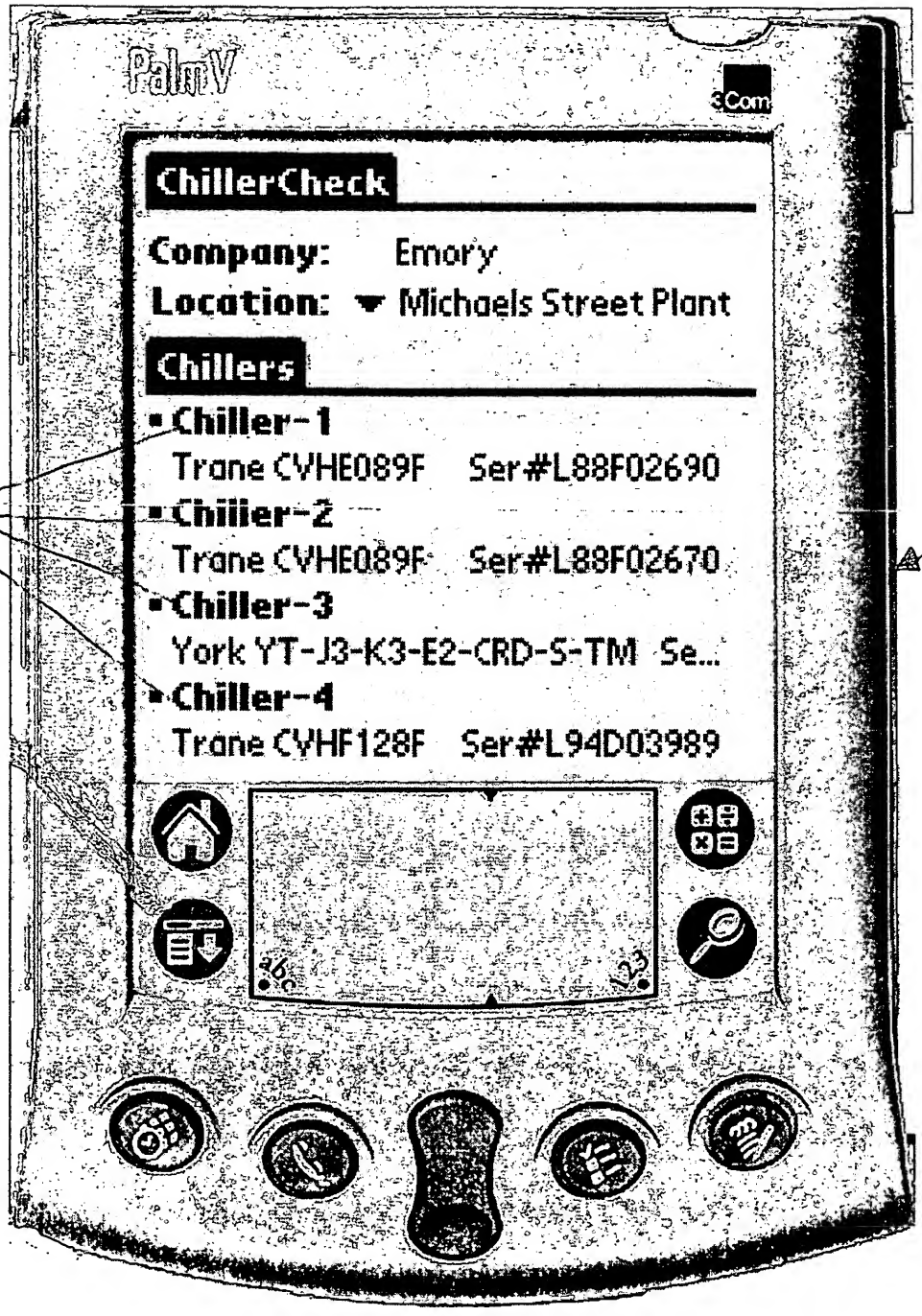
PalmV
3Com
ChillerCheck
Company: Emory
Location: Michaels Street Plant
Chillers
Chiller-1
Trane CVHE089F Ser#L88F02690
Chiller-2
Trane CVHE089F Ser#L88F02670
Chiller-3
York YT-J3-K3-E2-CRD-S-TM Se...
Chiller-4
Trane CVHF128F Ser#L94D03989
234
18

FIG. 13

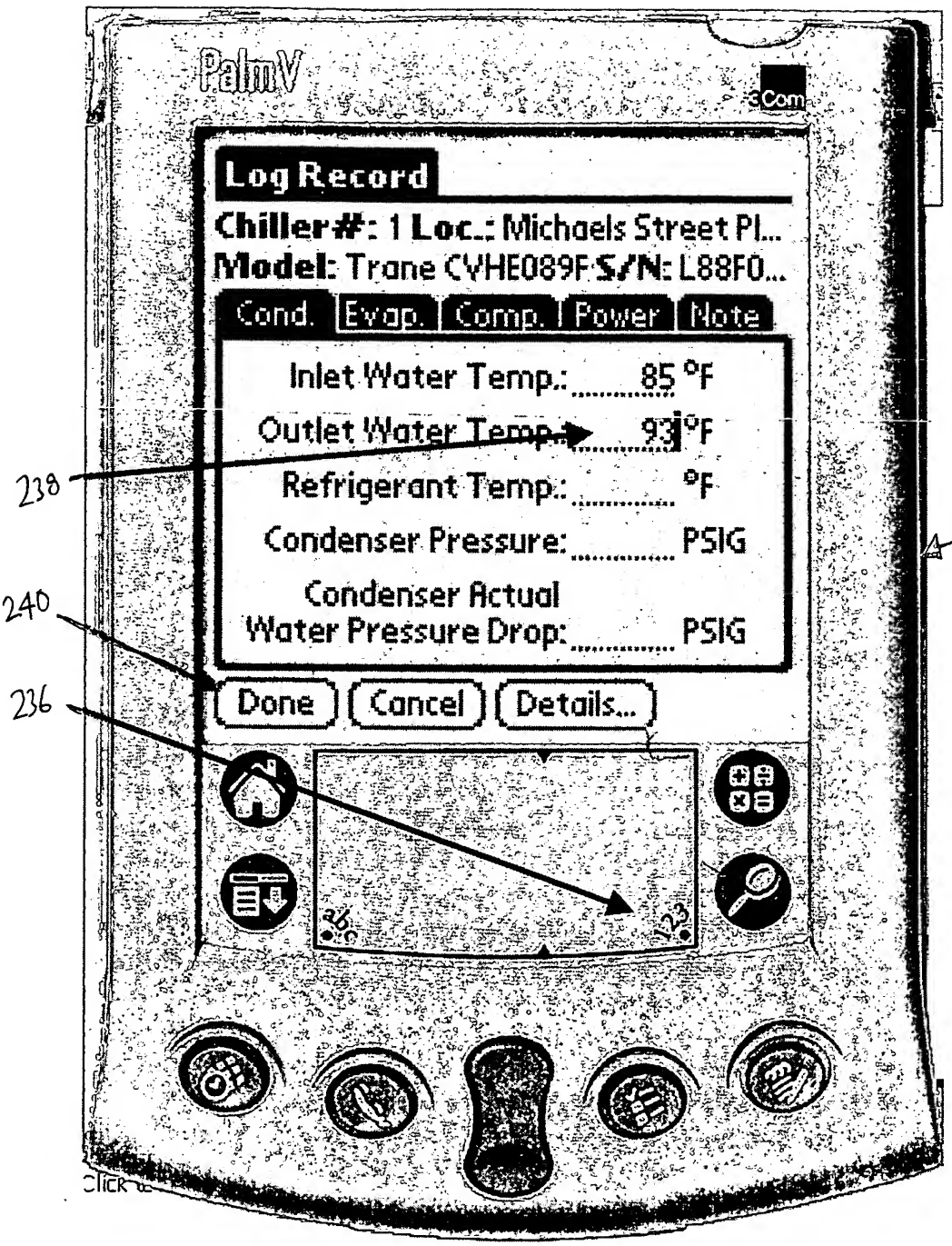

FIG. 14

Inventor: Lawrence J. Seigel
Title: "METHOD AND SYSTEM FOR EVALUATING THE EFFICIENCY OF AN AIR CONDITIONING APPARATUS"
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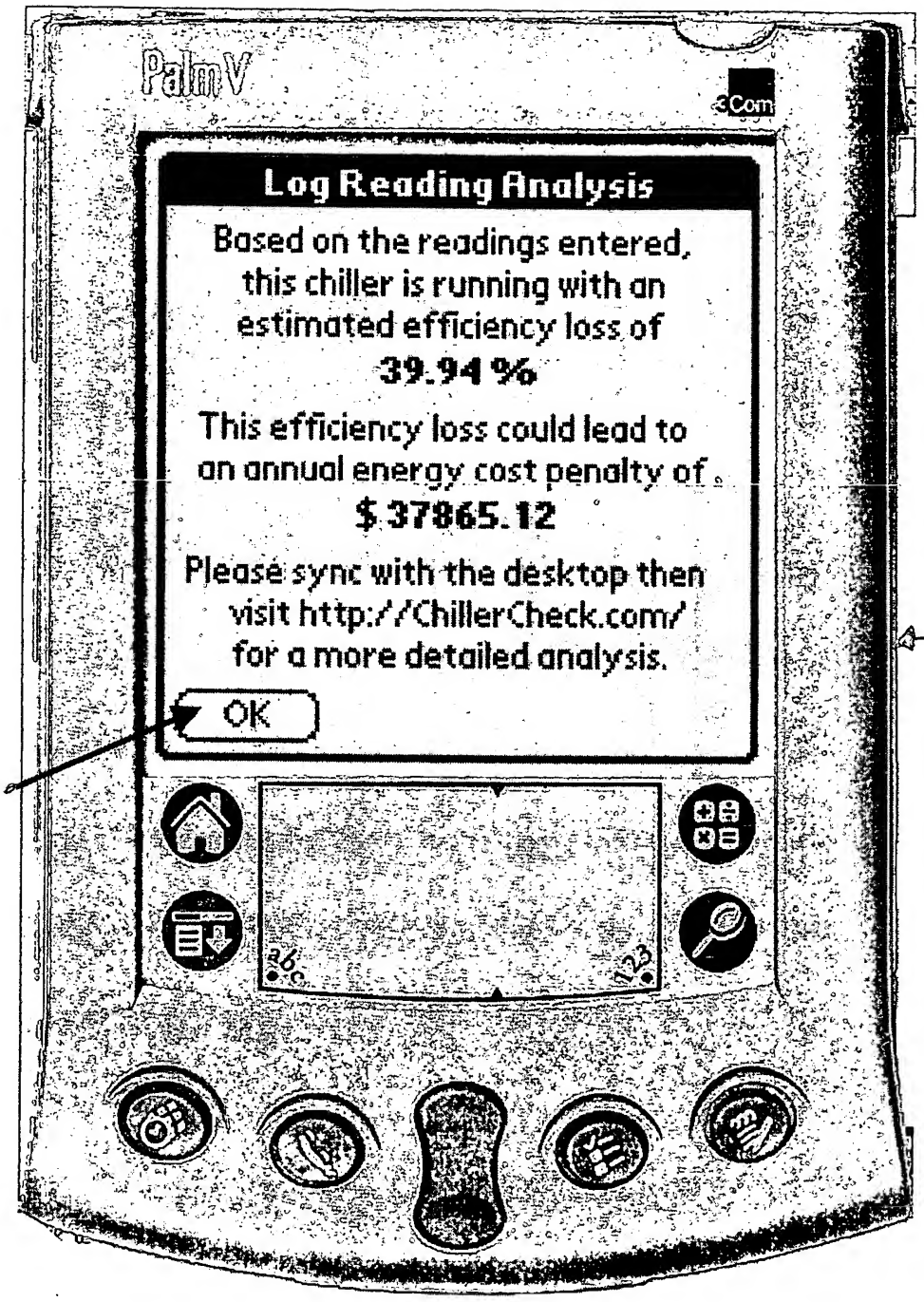

FIG. 15

Inventor: Lawrence J. Seigel
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CHILLERCHECK.COM
Patent Pending

ChillerCheck Main | Chiller #1 Main Page | Maint. Records | Add Maint. Record | Add Log Record | View Logsheet | Chart Trends

Add Maintenance Record for Chiller #1 at Admin Bldg.

163 165 178 170 172

Please fill in all information in the form below, then click the "Add Maintenance Record" button.

You will then be taken back to the Maintenance page for this chiller.

Maintenance Information

Annual Maintenance Date:	Select a Month / Day / Year
Oil Maintenance	
Oil Change Date:	Select a Month / Day / Year
Date Oil Added:	Select a Month / Day / Year
Quantity of Oil Added (Gallons):	
Oil Analysis Date:	Select a Month / Day / Year
Eddy Current Tests	
Eddy Current Test Date (Condenser):	Select a Month / Day / Year
Eddy Current Test Date (Evaporator):	Select a Month / Day / Year
Major Stop Inspection (compressor teardown)	
Major Stop Inspection:	Select a Month / Day / Year
Refrigerant Maintenance	
Refrigerant Analysis Date:	Select a Month / Day / Year
Date Refrigerant Added:	Select a Month / Day / Year
Quantity of Refrigerant Added (Pounds):	
Tube Cleaning	
Condenser Tube Cleaning Date:	Select a Month / Day / Year
Evaporator Tube Cleaning Date:	Select a Month / Day / Year
Purge Maintenance	
Purge Tank Reclaim Date:	Select a Month / Day / Year
Purge Run Time Reading When Tank Reclaimed:	

10/27/2004 5:58:45 PM

FIG. 16A

Purge Filter Dryer Change Date:	Select a Month / Day / Year
Major Repairs	
Major Repair Date:	Select a Month / Day / Year
Major Repair Description:	
Notes	
Maintenance Notes: (You may enter a note about any type of maintenance.)	
Add Maintenance Record	

FIG. 16B

CHILLERCHECK.COM

Patent Pending

ChillerCheck Main | Chiller #1 Main Page | Maint. Records | Add Maint. Record | Add Log Record | View Logsheet | Chart Trends

Maintenance Records for Chiller #: 1 at Admin Bldg.

163 165 178 170 172

Below is a list of the most recent Maintenance Operations for your Chiller # 1. You may click on the name of a Maintenance Type to view all records of that type.

Maintenance Type	Most Recent Maintenance
Annual Maintenance:	October 18, 2001
Oil Maintenance	
Oil Change:	October 18, 2001
Oil Analysis:	October 1, 2001
Eddy Current Tests	
Condenser Eddy Current:	September 9, 2001
Evaporator Eddy Current:	September 10, 2001
Major Stop Inspection (compressor teardown)	
Major Stop:	January 3, 2000
Refrigerant Maintenance	
Refrigerant Analysis:	January 3, 2000
Refrigerant Added:	August 23, 2001 – Quantity: 100 Pounds
Tube Cleaning	
Condenser Tube Cleaning:	October 19, 2001
Evaporator Tube Cleaning:	February 5, 2000
Purge Maintenance	
Purge Tank Reclaim:	February 7, 2001 – Purge Run Time at Change: 1212123
Major Repairs	
Major Repair:	April 4, 2000 Repair Description: motor burnout
Maintenance Notes	
Notes:	November 5, 2001 Note: starter problems resulted in burnout

FIG. 17

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